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OHIO POTATO CULTIVAR TRIALS

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OHIO STATEWIDE TRIALS - 1992

INTRODUCTION

The purpose of the statewide potato variety trials is to test new varieties for the benefit of Ohio growers and processors when these varieties are grown under various farm conditions. Cultural and pest control practices in each case are those used by the cooperating grower. Plant stands are recorded in the fields. At harvest, the tubers are evaluated, weighed, and graded, with samples taken for chipping tests.

Fifteen cultivars were planted at each of three farms in 1992. These farms were selected to give different soil and climatic conditions. The cultivars were selected either because they looked promising in previous statewide trials, and in the previous observation trials on two cooperating farms, or were selected from the cultivar plots at the Ohio Agricultural Research and Development Center (OARDC), Wooster.

Farm Locations

The three farms referred to in the introduction and throughout this publication are as follows:

Farm 1 (M) - Michael Farms, Urbana, Champaign County

Farm 2 (L) - Logan Farms, Mt. Gilead, Morrow County

Farm 3 (W) - Ohio Agricultural Research and Development Center (OARDC), Wooster, Wayne County

See Table 1 for summary of cultural practices followed on these cooperating farms -- planting dates, harvest dates, plant spacing and related information.

PROCEDURES

Fifteen cultivars were planted in four replicates on each of the three farms. Thirty seed pieces were planted in each replicate. In addition, 10 red-skinned varieties were planted in four replications at Farm 1. Four yellow-flesh varieties with 4 replicates were tested at Farm 3. Two single-observation trials, Beltsville (18 varieties) and Louisiana (15 varieties) were also planted at Farm 3, with 1 replication of each variety.

The seed potatoes were cut and treated on May 5, 1992. Farm 1 was planted on May 12, Farm 2 was planted on May 15 and Farm 3 was planted on May 20. All were harvested from September 15 to October 1, 1992. The potatoes were harvested with flat bed diggers, then picked up and weighed. Representative 40 pound samples were collected, then graded on September 30 (Farm 1), October 1 (Farm 2), and October 27 (Farm 3). Atlantic, Katahdin, and Superior were standard varieties used for comparison. At grading, ten tubers from each replication were cut for internal defects. A sample of each cultivar was taken to The Ohio State

University pilot plant (Columbus) for chip tests. Potatoes were stored at 52°F until they were processed on October 22 and November 3, 1992.

WEATHER AND GROWING CONDITIONS

Below average temperatures and above average rainfall occurred in Ohio during the 1992 growing season. See Table 2 and 1992 North Central Report for specific data.

OBSERVATIONS AND VIEWPOINTS ON THE 1992 PLOTS

Every potato grower knows 1992 was an unusual year from the standpoint of weather conditions - moderate temperatures and excessive rainfall in various areas. In Eastern U.S., these weather conditions favored excellent yields in most major producing areas such as Maine, parts of Pennsylvania, Michigan and other states competing with Ohio. These high yields, e.g. 370 cwt. in Wisconsin, 300 cwt. in Michigan, 320 cwt. in Upstate New York, and Ohio's yield of 240 cwt. in 1992 compared with 185 cwt. in 1991 reflect the effect of environment - rainfall and temperatures on yield of potatoes.

When you study this report on the 1992 potato trials, be sure to remember the temperatures during the major months, June-July-August, when very few days had temperatures above 90°F. Ordinarily, Ohio growers do not have such favorable growing conditions. The following data from the plots at the Ohio Agricultural Research and Development Center, Wooster, Ohio, illustrates the effect of seasonal conditions on the yield of potatoes.

	WOOSTER - U.S. NO. 1 (CWT/A)			
Cultivar	1988	1990	1991	1992
Somerset		245	126	234
Norchip	133	285	124	276
N.Y. 85		237	147	320
Katahdin	163	208	121	311
Gemchip			111	337
Atlantic	246	278	163	343
LaBelle		226	122	177
Monona	170	243		271

FIELD OBSERVATIONS

The average percent stand at Farm 1 was 70%; Farm 2 was 66%; and Farm 3 was the highest with an average of 86% (Table 2). However, Farm 1 had the highest yields at harvest. The average percent stand for all three locations was 74%; one of the lowest on record.

Observations are made under field conditions when plots are harvested. Tuber shape, color and surface texture are noted, along with uniformity and cultivar yielding ability. Observations are recorded on each replication. These observations, along with yield data help determine if

cultivars warrant further testing under Ohio growing conditions.

Several cultivars looked promising in 1992:

MaineChip - round to oval tubers with uniform surface with good overall appearance

Gemchip - Round to oval tubers with light buff skin; fairly uniform tubers; good yielding ability, trace of surface scab

Somerset - smooth tuber surface; tubers hold their shape quite well even under adverse growing conditions; uniform shape and size; slight surface scab

Eide Russet - looked promising at two of the sites in 1992; oblong to long russet-type with heavy russeting, good uniformity; cultivar holds its shape well; uniform shape but small size. Needs more testing under stressful growing conditions.

During recent years, many entries in the Ohio trials have been named. The following examples are included in this report:

Name	Number
Castile	B7592-1
Mainechip	AF875-16
Snowden	W855
Eide Russet	MN10874
LaBelle	LA01-38
Gemchip	BR7093-24
Somerset	AF236-1
Chipeta	AC80545-1
Novachip	F77087
Sunchip	B9792-8B
Portage	CS7697-24

In summary, many new cultivars are being released. Growers should make an effort to plant a small plot of these promising new cultivars which are mentioned in this report.

GRADES AND YIELDS

The following tables present yield information as well as grades and defects. The average total yields for the three locations ranged from 333 cwt/A to 561 cwt/A. Farm 1 had total yields ranging from 376 cwt/A to 764 cwt/A. The mean percent U.S. number 1's for the 15 main trial cultivars ranged from 70 to 88% (Table 5).

SOIL ANALYSES OF STATEWIDE TRIAL PLOTS - 1992

Test Results	------Cooperating Farms------- 1(M)	2(L)	3(W)*
pH	6.4	6.9	
P (lb/A)	616	106	
K (lb/A)	373	356	
CA (lb/A)	3520	3960	
Mg (lb/A)	508	627	
CEC (meq/100g)	14	13	
Ca (% base sat.)	64	76	
Mg (% base sat.)	15	20	
K (% base sat.)	3.5	3.5	
Zn (lb/A)	35.7	22.2	
B (lb/A)	1.0	1.3	
OM (%)	2.4	3.7	
Mn (lb/A)	53	29	
Fe (lb/A)	152	180	
Cu (lb/A)	2.9	5.1	
NO_3N (lb/A)	30	30	

Cooperating Farms:

1 = Michael Farms, Urbana

2 = Logan Farms, Mt. Gilead

3 = Ohio Agricultural Research and Development Center, Wooster

Soil analyses conducted at Research-Extension Analytical Lab, The Ohio Agricultural Research and Development Center, Wooster.

* Soil samples were not collected at Wooster

Table 1. Cultural and pest control practices and rainfall totals for Ohio statewide potato trials – 1992.

	Farm 1 (M)	Farm 2 (L)	Farm 3 (W)
Date planted	May 12	May 15	May 20
Date harvested	September 30	October 1	September 15
1991 crop	Green Beans	Corn	Alfalfa
Cover crop	Rye	None	Winter wheat – for plow down
Fertilizer applied in row	1150 lbs. 13–20–20 at planting	lbs. 150–175–175 30S, Mg 15#	1200 lbs. 10–20–20 (1/2 at plowdown; 1/2 at planting)
Herbicide	Dual, Sencor	Dual, Lorax	Dual, Sencor
Insecticide	Guthion, Thiodan, Asana, Monitor	Phorate	Asana, Pounce, Guthion, Monitor
Spacing	8″ X 36″	8″ X 36″	12″ X 36″
Soil type	Silt loam	Brookston silt loam	Wooster silt loam
Soil conditions at planting	Good	Average	Excellent
Irrigation	No	No	No
Monthly Rainfall Totals (Inches)			
May	3.74	N/A	1.19 (5/20–5/31)
June	4.38	2.83	2.15
July	13.61	11.26	8.30
August	3.60	2.93	4.03
September	2.83	0.84 (as of 9/7)	0.61 (9/1–9/15)
Season Total	28.16	17.86	16.28

Table 2. Stand counts for Ohio statewide trials and yellow trial, 1992.

MAIN TRIALS

	--- Cooperating Farms ---			
	1(M)	2(L)	3(W)	
Date stand counts were taken:	June 20	June 22	June 25	
Days after planting:	39	38	36	
Cultivar	----------% Stand----------			Mean
W870	67	64	82	71
Castile	76	73	94	81
Mainechip	74	69	97	80
Snowden	74	78	93	82
W887	61	63	78	67
Eide Russet	82	77	83	81
Labelle	64	55	49	56
Superior	64	67	85	72
Gemchip	66	62	88	72
S-3	73	69	81	74
Atlantic	54	48	86	63
AF1060-2	66	69	93	76
Somerset	83	69	88	80
AC80545-1	75	70	93	79
Katahdin	73	63	93	76
Farm Mean	70	66	86	74

YELLOW TRIAL: Planted at Wooster only

Yukon Gold	80
Saginaw Gold	93
Carolla	83
MS401-1Y	86
Mean	86

Table 3. Stand counts for observational trials, Wooster, OH, 1992.

BELTSVILLE OBSERVATION TRIAL

Cultivar	% Stand
CS7232-4	87
AF845-11	100
CS7697-24	70
B0339-1	77
B0717-1	87
B9792-8B	87
B0220-14	97
B0493-8	73
B0169-56	90
B0178-35	83
B0178-34	87
B0682-6	90
B0329-1	90
B0613-2	57
B0257-12	93
B09922-11	77
B0175-20	73
B0585-1	80
Mean	83

LOUISIANA OBSERVATION TRIAL

Cultivar	% Stand
LA81-107	67
LA91-44	83
LA91-39	67
LA91-60	90
LA91-116	97
LA81-22	90
LA91-12	97
LA81-9	63
LA81-44	90
LA81-4	80
LA91-42	100
LA91-160	97
LA71-63	77
LA91-18	97
LA91-127	27
Mean	81

Table 4. Percent B's, culls, internal defects; Major external defects for main trials, 1992.

	AVERAGE OF 3 LOCATIONS			
			Internal Defects	
Cultivar	% B's	% Culls	% Hollow Heart	Major External Defects 1
W870	12.3	4.7	18.1	sh, gr, sc
Castile	14.7	8.7	3.9	sh, gr, 2nd
Mainechip	11.3	5.3	13.5	sh, gr, cr, 2nd, sc
Snowden	17.7	3.3	6.7	sh, gr, sc, 2nd
W887	7.7	5.0	3.3	sh, 2nd, gr
Eide Russet	24.3	5.7	1.0	sh, rot
Labelle	4.7	8.7	1.1	sh, gr, 2nd
Superior	9.0	8.0	1.7	sh, 2nd
Gemchip	10.7	6.3	14.2	gr, sc, 2nd
S-3	3.7	11.3	4.2	sh, sc, gr, 2nd
Atlantic	8.3	12.0	31.7	sh, gr, cr
AF1060-2	12.7	7.3	0	sh, gr, 2nd
Somerset	16.0	5.3	10.8	sh, gr, 2nd
AC80545-1	6.3	9.3	4.2	sh, gr, sc, 2nd
Katahdin	6.0	11.3	13.3	gr, sh, cr
Mean	11.0	7.5	8.5	

1 Abbreviations for external defects

Sh = misshapen
2nd = second growth
Cr = growth cracks
Gr = greening
Sc = scab

Table 5. Total yield, percent U.S. No. 1 and marketable yield for main trial potato cultivars, Ohio statewide trials - 1992.

	-----Farm 1 (M)-----			-----Farm 2 (L)-----			-----Farm 3 (W)-----			---Mean of 3 Farms---		
Cultivar	Yield Cwt/A	No. 1 %	No. 1 Cwt/A	Yield Cwt/A	No. 1 %	No. 1 Cwt/A	Yield Cwt/A	No. 1 %	No. 1 Cwt/A	Yield Cwt/A	No. 1 %	No. 1 Cwt/A
W870	518	91	471	263	72	189	297	86	255	359	83	298
Castile	662	85	563	319	70	223	370	75	278	450	75	338
Mainechip	513	90	462	315	74	233	428	86	368	418	83	347
Snowden	601	89	535	247	63	156	269	85	229	372	79	294
W887	562	91	511	472	86	406	185	86	159	406	88	357
Eide Russet	551	81	446	350	62	217	307	67	206	403	70	282
Labelle	700	93	651	262	88	231	224	79	177	395	87	344
Superior	376	87	327	233	82	191	396	80	317	335	83	278
Gemchip	556	91	506	288	74	213	399	84	335	414	83	344
S-3	764	88	672	459	85	390	329	90	296	517	88	455
Atlantic	368	88	324	286	72	206	437	63	275	364	74	269
AF1060-2	583	88	513	328	73	239	384	79	303	432	80	346
Somerset	584	87	508	417	65	271	278	84	234	426	79	336
AC80545-1	592	91	539	421	87	366	273	74	202	429	84	360
Katahdin	488	88	429	444	85	377	416	75	312	449	83	373
Mean	561	89	499	340	76	258	333	79	263	411	81	333

Fig. 1

1992 OHIO POTATO TRIALS

MEAN CWT/A & #1'S CWT/A FOR 3 FARMS

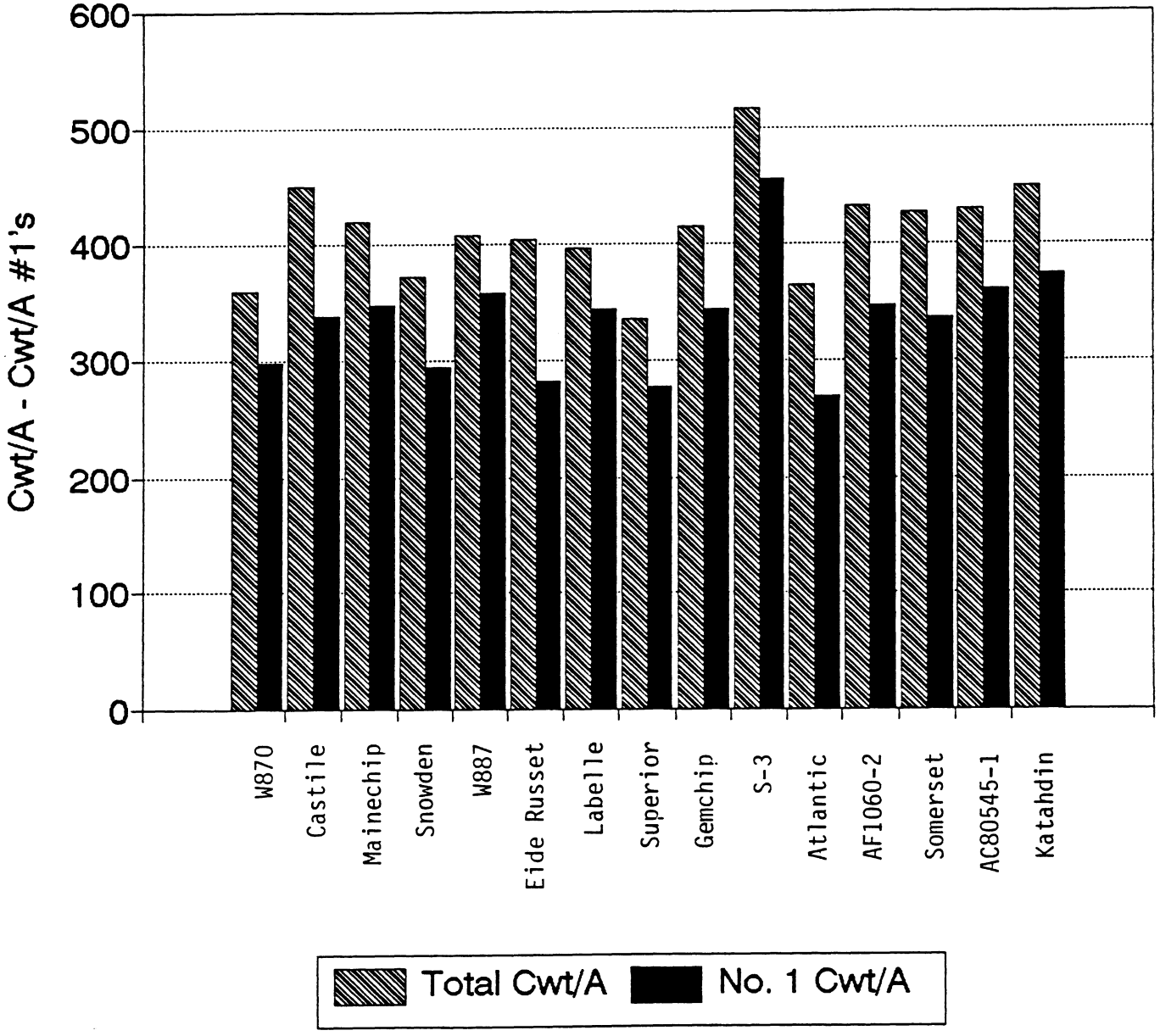


Table 6. Mean U.S. No. 1 yields in cwt. per acre for major entries in the Ohio statewide potato trials of all farms each year grown in the last ten years and grown more than one year.

Cultivar	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Early & Med. Early										
Superior						131		207	224	278
Conestoga	141	230	266	321	225					
Rus. Norkotah				302	272	105				
Early Midseason										
Langlade (W718)						181	188			
Norchip	184	208	228	301	236	160	161	235		
Midseason										
Snowden (W855)							167		231	373
LA01-38 (LaBelle)			359	413	330	233	211	272		344
Katahdin	238	315	335	363	276	187	178	246	251	373
Atlantic							193	260	260	269
Late										
Castile (B7592-1)							191	280	238	338
Allegany (N.Y.72)						213	184		192	
Denali	206									
Elba (NY59)	245			393						
Neb.A129-69-1	207	278								
WNC521-12			325	344						
MS700-70				378	281	232	187	230	263	
Gemchip (BR7093-24)								268	230	344
Steuben (NY81)						235	215	224		

Some of the cultivars grown in Ohio for which the characteristics are well known after several years of testing have been omitted in later years. Some cultivars listed were included in the trials prior to the last ten years. Katahdin, Atlantic and Superior are well known and used as standards for comparison.

Table 7. Specific gravity, chip color, percent blister, and Agtron E-5F readings of potato cultivars grown at three farms in statewide trials, 1992.

	Farm 1(M)				Farm 2(L)			
Cultivar	Specific Gravity	Chip Color y	% z Blister	Agtron	Specific Gravity	Chip Color y	% z Blister	Agtron
W870	1.089	4	10	22.9	1.087	3	30	39.6
Castile	1.084	4	20	27.7	1.083	5	40	17.7
Mainechip	1.090	1	20	52.3	1.084	2	10	51.1
Snowden	1.085	3	10	48.1	1.092	3	20	43.1
W887	1.084	2	20	49.9	1.097	3	10	39.1
Eide Russet	1.083	4	20	20.8	1.083	4	30	24.1
LaBelle	1.086	4	20	23.9	1.077	4	20	25.9
Superior	1.073	5	20	17.4	1.075	5	20	23.4
Gemchip	1.068	3	30	26.9	1.085	4	20	34.0
S-3	1.085	3	20	42.1	1.093	2	30	43.3
Atlantic	1.084	2	10	52.5	1.093	3	20	40.1
AF1060-2	1.073	4	20	20.7	1.079	3	10	42.1
Somerset	1.087	2	10	52.8	1.086	4	30	23.5
AC80545-1	1.075	3	0	44.5	1.086	2	0	45.6
Katahdin	1.072	4	10	18.2	1.080	4	10	25.4
Mean	1.076	3	15	32.5	1.085	3.4	20	34.5

	Farm 3(W)				Mean of 3 Farms			
Cultivar	Specific Gravity	Chip Color y	% z Blister	Agtron	Specific Gravity	Chip Color y	% z Blister	Agtron
W870	1.093	5	40	11.0	1.090	4.0	27	24.5
Castile	1.078	5	30	17.6	1.082	4.7	30	21.0
MaineChip	1.087	2	0	54.4	1.087	1.7	10	52.6
Snowden	1.089	3	10	44.0	1.089	3.0	13	31.9
W887	1.088	4	20	19.0	1.090	3.0	17	36.0
Eide Russet	1.074	5	20	14.1	1.080	4.3	23	19.7
LaBelle	1.076	4	20	24.0	1.080	4.0	20	24.6
Superior	1.080	1	10	41.0	1.076	3.7	17	27.3
Gemchip	1.073	3	40	29.3	1.075	3.3	30	19.9
S-3	1.090	4	20	22.4	1.089	3.0	23	35.9
Atlantic	1.092	3	20	28.0	1.090	2.7	17	40.2
AF1060-2	1.070	4	30	25.9	1.074	3.7	20	29.6
Somerset	1.085	3	10	36.8	1.086	3.0	17	37.7
AC80545-1	1.077	2	0	45.1	1.079	2.3	0	45.1
Katahdin	1.068	3	20	28.3	1.073	3.7	13	24.0
Mean	1.081	3.4	19.3	29.4	1.081	3.3	18	32.1

y PC/SFA Standards; 1=light (high Agtron index readings), 5=dark (low Agtron index readings)
z Percentage of chips that develop blisters > 20mm in diam. during the frying process

Table 8. Plant stand, total yields, U.S. No. 1 yields, grade distribution, and internal disorders for Red Potato Trial entries, grown at Michael Farms, Urbana, OH – 1992.

Cultivar	% Plant Stand	Total Yield Cwt/A	U.S. No. 1 Cwt/A	U.S. No. 1 %	B Size %	Culls %	Internal Disorders (%) Hollow Heart	Internal Necrosis
Dark Red Norland	82	233	182	78	2	20	0	0
Dark Red Norland II	81	198	160	81	1	18	0	0
LA12-59	80	317	282	89	3	8	3	0
LA72-12	62	254	201	79	14	7	5	0
ND2224-5R	70	240	192	80	1	19	0	0
Super Red	81	182	144	79	3	18	0	0
W1061-R	74	216	173	80	0	20	0	0
W8344-R	73	238	181	76	2	22	0	0
W8475-R	65	56	27	49	1	50	0	0
W84178-R	96	203	166	82	2	16	0	0

All data based on 4 replications
PLANTING DATE: May 2, 1992
HARVEST DATE: August 25, 1992
Cultural practices and plant spacing, See Table 1.

z Hollow heart and internal necrosis ratings indicate the percentage of affected tubers found in 40 tubers sampled

Table 9. Plant stand, total yields, U.S. No. 1 yields, grade distribution, and internal disorders for yellow flesh potato trial entries, Wooster – 1992.

Cultivar	% Plant Stand	Total Yield Cwt/A	U.S. No. 1 Cwt/A	U.S. No. 1 %	B Size %	Culls %	Tuber Data[z] Tuber Color	Skin Texture	Tuber Shape	Eye Depth	Appear-ance	Internal Disorders (%) Hollow Heart	Internal Necrosis
Yukon Gold	80	310	223	72	2	26	6.0	6.0	3.7	5.0	4.3	47	0
Saginaw Gold	93	418	347	83	5	12	6.7	6.3	3.0	5.7	5.7	0	0
Carolla	55	445	227	51	7	42	5.7	6.7	5.3	5.0	3.0	0	0
MS401-1Y	88	420	370	88	5	7	5.8	5.5	2.0	5.0	6.8	35	0

Observation Trials (Wooster) Table 1. Total yields, U.S. No. 1 yields, grade distribution, tuber data and internal disorders for Beltsville observation trial entries - 1992.

Cultivar	Yield Cwt/A	Total No. 1 Cwt/A	U.S. No. 1 %	B size %	Culls %	Tuber Data[z] Tuber Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appearance	Internal Necrosis	Hollow Heart	Vascular Discoloration
CS7232-4	191	167	87	4	9	5.5	6	7	5	3.5	0	0	0
AF845-11	186	83	45	5	50	5	6	3	3	3	0	0	0
CS7697-24	283	183	65	8	27	6.5	6	3	7	6	0	0	0
B0339-1	332	223	67	8	25	4	2.5	7	6	6.5	0	3	0
B0717-1	414	349	84	9	7	6	5	2	6	6	0	0	0
B9792-8B	361	211	58	3	39	5.5	5	4	4	3	0	3	0
B0220-14	392	263	67	5	28	4	2	7	6	6	0	6	0
B0493-8	414	324	78	7	15	4	2	8	7	4	0	1	0
B0169-56	392	284	72	15	13	4	3	7	6	5	0	2	0
B0178-35	348	297	85	4	11	5.5	6	6	6	3	0	2	0
B0178-34	397	251	63	5	32	5	5	3	5	5	0	1	0
B0682-6	254	227	90	4	6	5.5	5	2	6	5	0	0	0
B0329-1	440	302	68	4	28	4	3	8	6	5	0	2	0
B0613-2	307	212	69	3	28	5	5	3	4	3	0	1	0
B0257-12	370	295	80	2	18	5.5	6	4	5	4	0	1	0
B9922-11	293	167	57	2	41	5	2	7	6	6.5	0	1	0
B0175-20	295	125	42	4	54	6	6	6	6	4	0	2	0
B0585-1	346	265	77	3	20	6	6	2	6	6	0	0	0

z Tuber Data Rating System:
Tuber Color: 1)purple 2)red 3)pink 4)dark brown 5)brown 6)tan 7)buff 8)white 9)cream
Skin Texture: 1)part russet 2)heavy russet 3)mod. russet 4)light russet 5)netted 6)slight net. 7)mod. smooth 8)very smooth
Tuber Shape: 1)round 2)mostly round 3)round to oblong 4)mostly oblong 5)oblong 6)oblong to long 7)mostly long 8)long 9)cylindrical
Eye Depth: 1)very deep 2)--3)deep 4)--5)intermediate 6)--7)shallow 8)--9)very shallow
Appearance: 1)very poor 2)--3)poor 4)--5)fair 6)--7)good 8)--9)excellent

y Hollow heart and internal necrosis ratings indicate the number of affected tubers found per 10 tubers sampled.

Observation Trials (Wooster) Table 2. Total yields, U.S. No. 1 yields, grade distribution, tuber data and internal disorders for Louisiana observation trial entries, 1992.

Cultivar	Yield Cwt/A	Total No.1 Cwt/A	U.S. No.1 %	U.S. B size %	Culls %	Tuber Data* Tuber Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appearance	Internal Disorders[z] Internal Necrosis	Hollow Heart	Vascular Discoloration
LA81-107	201	171	85	5	10	7	7	3	7	7	0	0	0
LA91-44	58	30	51	32	17	6	7	3	5	3	0	0	0
LA91-39	90	69	77	23	0	7	6.5	5	6	5	0	0	0
LA91-60	307	218	71	10	19	6	6	3	5	3	0	0	0
LA91-116	232	186	80	6	14	7	6	2	5	4	0	0	0
LA81-22	365	300	82	3	15	5.5	6	3	5	4	0	0	0
LA91-12	220	174	79	16	5	6	7	4	6	5	0	0	0
LA81-9	196	123	63	11	26	6	6	3	5	5	0	1	0
LA81-44	341	164	48	3	49	5.5	6	3	4	3	0	1	0
LA81-4	264	156	59	5	36	6	7	2	6	5	0	0	0
LA91-42	206	142	69	5	26	5.5	6	3	7	4	0	2	0
LA91-160	312	240	77	11	12	5	5	2	5	6	0	1	0
LA71-63	186	130	70	4	26	5.5	6	6	7	5	0	4	0
LA91-18	150	135	90	5	5	5	6	2	6	6	0	0	0
LA91-127	65	41	63	9	28	5	5	3	5	5	0	0	0

z Internal Disorder ratings indicated the number of affected tubers found per 10 tubers sampled.

* Tuber Rating System, see Observation Table 1.

1992 NORTH CENTRAL REGIONAL POTATO TRIALS

Location Wooster, Ohio — Soil Type Wooster silt loam

Fertilizer Treatment 600 lbs 10-20-20 at plow down (spring) 600 lbs 10-20-20 at planting — Date Planted May 20

Date Harvested September 15, 1992 — Size of Plots Single rows - 30 ft. long

Spacing-Between Hills 12 inches — Spacing-Between Rows 36 inches

Replications 4 — Number of Hills per Replication 30

Environmental Factors (rainfall, temperature, irrigations, etc.):

	Rainfall (in.)	Long Term Avg.(in.)	Air Temperature (°F) Avg. Min.	Avg. Max	Long Term Avg. (°F) Min.	Max.
May 20-31	1.19	1.59	43.9	69.2	49.6	73.7
June	2.15	3.97	51.9	77.1	55.5	79.4
July	8.30	4.19	61.6	81.2	59.6	83.6
Aug.	4.03	3.66	55.2	78.1	57.8	81.9
Sept. 1-15	0.61	1.73	53.5	76.9	54.2	78.5
Growing Season Total	16.28	15.14				

Sprays Applied:

6/17 & 6/21	Dithane (2 lbs) + Pounce (12 oz)
7/1	Asana (12 oz) + Dithane (4 lbs)
7/11	Dithane (4 lbs) + Monitor (2 pts)
7/23	Thiodan (2 lbs) + Bravo (2 qt)
7/28	Bravo (1 qt) + Thiodan (2 lbs) + Asana (10 oz)
8/5	Penncozeb (2 lbs) + Asana (9 oz) + Thiodan (2 lbs) + Dithane (0.5 lbs)
8/14	Penncozeb (2 lbs) + Asana (9 oz) + Dithane (0.5 lbs)
8/18	Bravo (1 pt) + Guthion (1.5 pt)

Other Data (vine killing, specific gravity determinations, etc.):

- Herbicide: May 21, 1992 - Dual 8E (32 oz) + Sencor 75 WP (2/3 lb)

- Vine killing: September 1; rotary mower

- Specific gravity determined using weight in air-weight in water method, and solids determined by tabular conversion.

- Objective chip color measurements were made with Agtron E-5F

- Early blight evaluations were not made due to lack of disease pressure

- Average plant maturity ratings were not made due to excessively vegetative state at vinekill

SUMMARY SHEET

Selection Number or Variety	Aver. (1) Maturity	Most Representative Scab Area-Type (A-T)	CWT/A Aver. Yield	CWT/A Yield U.S. #1	Average Percent U.S. #1	Average % Solids	Gen.(4) Merit Rating	(5) Chip Color	Early Blight Reading	Comments and General Notes
EARLY TO MEDIUM MATURITY										
MN14489	N/A	0-0	201	135	67	18.32		5	N/A	variable tuber shape,size,surface
Norland	"	T-1	381	328	86	18.95	5	3	"	uniform tubers;light red color
Norgold Russet M	"	0-0	363	203	56	18.53		5	"	enlarged lenticels
Norchip	"	0-0	329	237	72	14.94		4	"	enlarged lenticels; poor appearance
MEDIUM LATE TO LATE MATURITY										
MN12823	N/A	0-0	322	225	70	14.94		5	"	variable tuber shape,size
ND1871-3R	"	0-0	428	342	80	17.89	1	4	"	good red color;good appear.
ND2224-5R	"	0-0	370	315	85	20.00	3	5	"	good red color;uniform tubers
LA12-59	"	0-0	407	322	79	22.33	4	4	"	apical & eyes deep; enl. lenticels
Wisc. 870	"	0-0	297	255	86	22.96		5	"	flat shape problem;enl.lent.;hollow heart
Wisc. 887	"	T-5	185	159	86	21.90		4	"	apical end recessed,some flat tubers
Wisc 1100R	"	T-5	389	323	83	18.10	2	4	"	good red color
Red Pontiac	"	0-0	424	267	63	15.57		4	"	very deep eyes;poor appearance
Russet Burbank	"	0-0	342	144	42	24.22		5	"	
AVERAGE	N/A		341	251	73	19.13		4.4	N/A	

1) 1-Very Early-Norland maturity; 2-Early-Irish Cobbler maturity; 3-Medium-Red Pontiac maturity; 4-Late-Katahdin maturity; 5-Very Late-Kennebec or Russet Burbank maturity.
2) AREA: T- Less than 1%; 1- 10-20%; 2- 21-40%; 3- 41-60%; 4- 61-80%; 5- 81-100%. TYPE: 1. Small, superficial; 2. Larger, superficial; 3. Larger, rough pustules; 4. Larger pustules, shallow holes; 5. Very large pustules, deep holes.
3) Percent total solids, not total solids/acre.
4) Place top five among all entries including check varieties; disregard maturity classification. (Rate first, second, third, fourth, fifth (in order) for overall worth as a variety).
5) Chip Color - PCII Color Chart of Agtron. Indicate what Agtron you are using.
6) Early blight: 1-susceptible; 5- highly resistant

SUMMARY OF GRADE DEFECTS

Selection Number or Variety	Percent External Defects (1)						Percent Internal Defects (1)			
	Scab (2)	Growth Cracks	Off Shape and Second Growth	Sun Green	Tuber Rot	Total (3) Tubers free of External Defects	Hollow Heart	Internal Necrosis	Vascular Discolor-ation	Normal Tubers (4)
EARLY TO MEDIUM MATURITY										
MN14489	0	5	17	5	0	73	5	0	0	95
Norland	4	2	6	0	0	88	8	0	0	92
Norgold Russet	0	4	36	3	0	57	18	0	0	82
Norchip	0	13	13	0	0	74	0	0	0	100
MEDIUM LATE TO LATE MATURITY										
MN12823	0	0	13	3	0	84	3	0	0	97
ND1871-3R	0	5	4	1	0	90	0	0	0	100
ND2224-5R	0	5	5	0	0	90	2	0	0	98
LA12-59	0	7	3	0	0	90	5	0	0	95
Wisc. 870	0	2	15	0	0	83	27	0	0	73
Wisc. 887	3	0	8	0	0	89	0	0	0	100
Wisc. 1100R	5	2	7	0	0	86	0	0	0	100
Red Pontiac	0	3	22	2	0	73	0	0	0	100
Russet Burbank	0	7	57	0	0	36	7	0	0	93
AVERAGE	.92	4.2	15.8	1.1	0	77.9	5.8	0	0	94.2

1) Based on four 20 tuber samples. Percentage based on number of tubers
2) Includes all tubers with scab lesions whether merely surface, pitted or otherwise and regardless of area. Be sure to count tubers with any amount of scab in this category.
3) This total – tubers free from any external defect of any sort.
4) Percentage normal tubers are those showing no internal defects. Some individual tubers will have more than one type of internal defect.

Ohio

Mark Bennett, Elaine Grassbaugh, John Elliott, David Kelly,
Gene Wittmeyer and Richard Hassell
The Ohio State University, Columbus and Wooster, OH

Introduction: Thirty-two varieties and clones were tested in 1992 at the Ohio Agricultural Research and Development Center, Wooster, as part of the NE107 Regional Project (Breeding and Evaluation of Potato Clones for the Northeast).

Methods: Plots were planted on May 20, 1992, with 30 hills spaced 12 inches apart, in rows 36 inches apart. A randomized complete block design with 4 replications was used. Soil type was a Wooster silt loam (fine-loamy, mixed, mesic Typic Fragiudalf) with a pH of 6.0 and an organic matter of 3.0%. Fertilization consisted of 1200 lbs/A 10-20-20, one-half applied at plow-down, and the remainder banded at planting. Herbicides used were Dual and Sencor. Pesticides included Bravo, Penncozeb, Dithane, Pounce, Asana, Monitor, and Guthion. Plots were vinekilled (rotary mower) on September 1 which was 104 days after planting. All plots were mechanically harvested on September 15, 1992. Chip samples were stored at 52°F and chipped 37 days after harvest. Chip color was evaluated using the standards established by the Potato Chip/Snack Food Association (PC/SFA). Objective color measurements were made with the Agtron E-5F. Specific gravity was determined using the potato hydrometer method. Hollow heart and internal necrosis ratings (Ohio Table 2) indicated the percent of affected tubers found per 40 tubers examined.

Results: Top yielding entries included NDT9-1068-11R, NY84, AF828-5, B0241-8, NYE11-45, Norland, F77087, B0257-12, LA12-59, MaineChip and Norchip. These ten varieties/clones produced total yields ranging from 444 cwt/A to 573 cwt/A, and percentage of U.S. No. 1 ranged from 63-86%. Entries with specific gravity above 1.080 included B0178-34, B0175-20, B0241-8, NY85, B0257-12, MaineChip, F77087, NC012-19, Norchip, and Atlantic. Potential for hollow heart was noted for one of the ten-top yielding entries (B0241-8) with 30% of the sampled tubers affected. Other entries with serious hollow heart problems included B0175-20, Russet Norkotah, NDT9-1068-11R, LA17-59, NC012-19, and Katahdin.

Early blight readings were not made due to lack of disease pressure. Plant data (size and maturity) at vinekill were not taken due to the extremely vegetative state of the plants. Rainfall during the 1992 growing season was 16.28 inches; 1.14 inches above the long term average for Wooster.

Ohio Table 1. Yield, marketable yield, percent of yield by grade size distribution and specific gravity for varieties grown at Wooster, Ohio - 1992.

Variety	Total Yield Cwt/A	Marketable Yield U.S. #1's Cwt/A	Marketable Yield % of STD	Size Distribution by Class (% of Total Yield) U.S. No.1 (>1-7/8")	Size Distribution by Class (% of Total Yield) B Size	Size Distribution by Class (% of Total Yield) Culls	Specific Gravity
Novachip (F77087)*	132	83	32	64	6	29	1.070
AF1060-2	384	304	92	79	11	10	1.070
B0178-34	408	332	98	82	5	14	1.090
AF828-5	510	430	123	84	3	12	1.073
B0175-20	420	246	101	58	3	39	1.089
B0241-8	490	425	118	86	4	9	1.087
Russet Norkotah	423	327	102	77	8	15	1.073
B0172-15	374	274	90	73	3	24	1.077
Superior	396	317	95	80	4	16	1.080
NY85	378	320	91	85	6	9	1.088
Monona	324	271	78	84	5	11	1.075
B0257-12	461	375	111	81	4	14	1.089
Castile	370	277	89	75	6	19	1.078
Eide Russet	307	204	74	67	18	15	1.074
Gemchip	399	337	96	84	6	10	1.073
MaineChip	428	369	103	86	5	9	1.087
NDT9-1068-11R	573	394	138	69	4	27	1.070
ND1538-1Russ	344	168	83	49	12	39	1.070
LA12-59	444	348	107	78	4	18	1.068
F77087 (Novachip)*	466	311	112	67	5	27	1.090
NY84	519	411	125	79	4	18	1.068
NYE11-45	480	394	115	82	4	14	1.074
ND2224-5R	293	243	70	83	11	5	1.071
NC012-19	431	378	104	88	3	10	1.085
Katahdin (std)	416	311	100	75	3	22	1.068
Norland	476	399	114	84	6	10	1.070
Norchip	437	276	105	63	7	30	1.085
Atlantic	436	343	105	79	4	17	1.092
AC80545-1 (Chipeta)	273	203	66	74	5	20	1.077
AC78069-17	238	134	57	56	6	38	1.078
C081082-1	212	155	51	73	6	20	1.074
C080011-5	329	224	79	69	6	22	1.073
W.D. LSD (K=100;5% level)	62.4	55.9		7.9	2.2	7.8	

* Different seed sources

Ohio Table 2. Tuber shape and appearance , hollow heart ratings, internal necrosis ratings and chip color for varieties grown at Wooster, Ohio - 1992.

Variety	z Tuber Data Shape	Appear-ance	Hollow Heart %	Internal Necrosis %	y Chip Color
Novachip (F77087)*	6	5	0	0	4
AF1060-2	3	5	0	0	4
B0178-34	3	5	0	0	2
AF828-5	3	6	0	0	3
B0175-20	6	5	13	0	3
B0241-8	3	6	30	0	4
Russet Norkotah	7	7	17	0	4
B0172-15	7	3	7	0	2
Superior	6	3	0	0	1
NY85	3	5	0	0	2
Monona	3	5	0	0	3
B0257-12	2	6	3	0	4
Castile	6	4	7	0	5
Eide Russet	6	6	3	0	5
Gemchip	2	6	10	0	3
MaineChip	3	6	5	0	2
NDT9-1068-11R	4	5	17	0	3
ND1538-1Russ	7	4	10	0	3
LA12-59	2	4	18	0	3
F77087 (Novachip)*	4	5	7	0	3
NY84	3	6	5	0	3
NYE11-45	3	6	3	0	2
ND2224-5R	3	8	0	0	4
NC012-19	2	6	48	0	3
Katahdin (std)	3	5	38	0	3
Norland	3	6	0	0	5
Norchip	3	4	0	0	3
Atlantic	3	7	7	0	3
AC80545-1 (Chipeta)	2	6	0	0	2
AC78069-17	7	5	0	0	5
C081082-1	7	6	0	0	4
C080011-5	5	5	0	0	3

z See standard NE 107 rating system
y PC/SFA standards

* Different seed sources

Ohio Table 3. Plant stand, percent blister, Agtron readings, and additional tuber data for varieties grown at Wooster, Ohio - 1992.

Variety	% Plant Stand	z % Blister	y Tuber Data Agtron E-5F	Skin Texture	Eye Depth	Skin Color
Novachip (F77087)*	23	20	22.2	7.0	7.0	7.0
AF1060-2	93	30	25.9	6.3	5.0	6.0
B0178-34	89	0	32.8	5.0	5.3	5.3
AF828-5	93	10	29.9	6.0	5.8	6.0
B0175-20	93	20	32.2	6.7	5.7	5.3
B0241-8	84	20	29.3	5.8	6.8	6.5
Russet Norkotah	95	20	15.3	3.0	5.0	4.0
B0172-15	92	10	30.1	6.7	5.0	6.0
Superior	85	10	41.0	6.0	3.3	5.5
NY85	89	10	36.6	7.0	6.3	7.0
Monona	100	0	36.4	6.3	5.0	6.7
B0257-12	88	10	21.7	5.3	'5.5	5.6
Castile	94	30	17.6	6.8	5.3	7.0
Eide Russet	82	20	14.1	4.0	5.0	5.0
Gemchip	88	40	29.3	6.8	6.3	6.8
MaineChip	97	0	54.4	6.5	6.0	7.0
NDT9-1068-11R	90	0	29.6	7.0	4.0	1.5
ND1538-1Russ	95	20	38.1	3.0	5.0	4.0
LA12-59	81	20	31.5	6.8	4.5	2.0
F77087 (Novachip)*	96	10	28.9	6.7	5.3	6.2
NY84	81	30	31.1	6.5	6.5	6.5
NYE11-45	85	40	35.5	6.8	6.0	6.3
ND2224-5R	88	10	17.6	7.0	7.0	2.0
NC012-19	94	20	34.7	7.0	6.0	6.3
Katahdin (std)	93	20	28.3	5.8	5.0	5.8
Norland	93	40	14.0	7.0	4.8	2.0
Norchip	98	10	30.7	6.5	4.8	6.9
Atlantic	86	20	28.0	5.8	6.0	6.0
AC80545-1 (Chipeta)	93	0	45.1	7.0	4.5	6.0
AC78069-17	89	30	16.1	2.3	6.0	4.0
C081082-1	66	10	34.1	7.0	7.0	6.0
C080011-5	76	0	21.7	4.0	6.0	7.0

z Percentage of chips that develop blisters greater than 20 mm in diameter during the frying process

y See standard NE 107 rating system

* Different seed sources

TUBER DATA RATING SYSTEM FOR POTATO VARIETY TRIALS – NE 107

Tuber Skin Color
1. Purple
2. Red
3. Pink
4. Dark Brown
5. Brown
6. Tan
7. Buff
8. White
9. Cream

Skin Texture
1. Part. russet
2. Heavy russet
3. Mod. russet
4. Light russet
5. Netted
6. Slight net.
7. Mod. smooth
8. Smooth
9. Very smooth

Tuber Shape
1. Round
2. Mostly round
3. Round to oblong
4. Mostly oblong
5. Obl. to long
7. Mostly long
8. Long
9. Cylindrical

Eye Depth
1. VD
2. —
3. D
4. —
5. Intermediate
6. —
7. S
8. —
9. VS

Appearance
1. Very poor
2. —
3. Poor
4. —
5. Fair
6. —
7. Good
8. —
9. Excellent

PLANT RATING SYSTEM

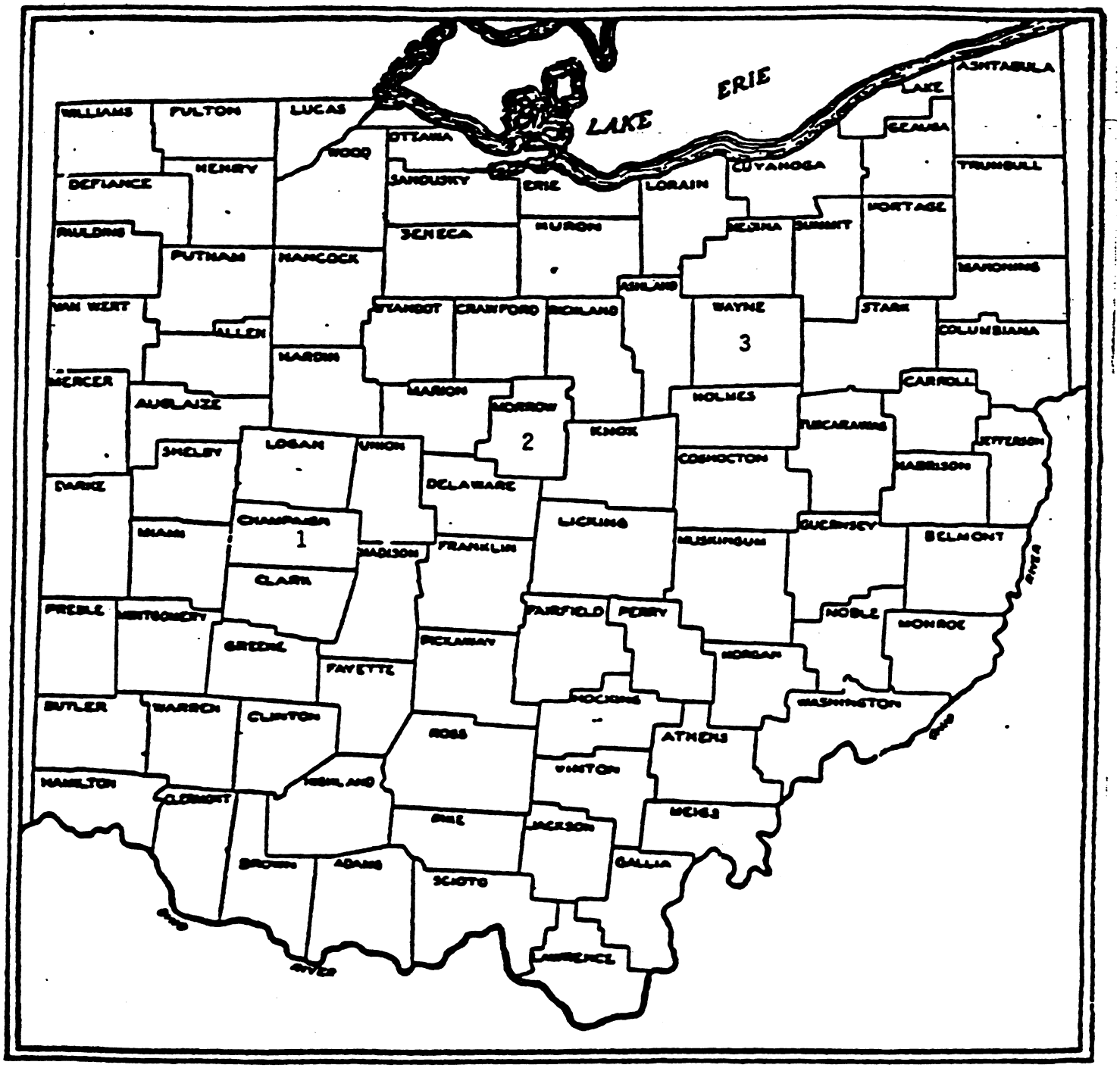
Plant Type
1. decumbent–poor canopy
2. decumbent–fair canopy
3. decumbent–good canopy
4. spreading–poor canopy
5. spreading–fair canopy
6. spreading–good canopy
7. upright–poor canopy
8. upright–fair canopy
9. upright–good canopy

Air Pollution
0. dead
1. decreasing plant appearance
2. with varying degrees
3. of defoliation
4.
5. most leaves have symptoms, but generally appearance is still good
6. good plant condition with decreasing
7. percent of foliar symptoms
8.
9. no symptoms

Plant Size
1. very small
2. +
3. small
4. +
5. medium
6. +
7. large
8. +
9. very large

Plant Maturity
1. very early
2. early
3. +
4. medium early
5. medium
6. medium late
7. +
8. late
9. very late

Plant Appearance
1. very poor
2. poor
3. +
4. —
5. fair
6. +
7. —
8. good
9. excellent



LOCATIONS OF 1992 OHIO POTATO VARIETY TRIALS

1. **Michael Farms, Urbana**
2. **Logan Farms, Mt. Gilead**
3. **Ohio Agricultural Research and Development Center, Wooster**

Appendix A. Summary of reported general merit ratings for varieties in the 1992 North Central Regional Potato Trials.

Variety	ALB	IA	IN*	LA*	Manitoba	MI*	MN	MO*	ND	NE	OH	Ontario	SD	WI*	---Total--- n	pts.	Ave. Rating
EARLY TO MEDIUM MATURITY																	
MN14489															0	0	0
Norland		5								1	5				3	11	3.7
Norgold Russet M									4	2					2	6	3.0
Norchip	4						3			3		5			4	15	3.8
MEDIUM LATE TO LATE MATURITY																	
MN12823		3			1		2					1	1		5	8	1.6
ND1871-3R	1				2				1		1	2	2		6	9	1.5
ND2224-5R	3	1					4		2		3				5	13	2.6
LA12-59	2	2			5		1		5	4	4		4		8	27	3.4
Wisc. 870							5			5					2	10	5.0
Wisc. 887					3							3	3		3	9	3.0
Wisc. 1100R		4							3		2		5		4	14	3.5
Red Pontiac	5				4							4			3	13	4.3
Russet Burbank																	

*Ratings not received

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